

In the Claims

Please amend claims 1, 4, 5, 8-12, 14-15 and 17-23 such that the claims read as follows:

Claim 1 (Currently Amended) A method of managing work in progress within a small lot size semiconductor device manufacturing facility comprising:

- providing a small lot size semiconductor device manufacturing facility having:
 - a plurality of processing tools; and
 - a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and
- maintaining a predetermined work in progress level within the small lot size semiconductor device manufacturing facility by:
 - increasing an average cycle time of low priority substrates within the small lot size semiconductor device manufacturing facility; and
 - decreasing an average cycle time of high priority substrates within the small lot size semiconductor device manufacturing facility so as to approximately maintain the predetermined work in progress level within the small lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates.

Claim 2 (Original) The method of claim 1 wherein the small lot size is 5 or fewer substrates.

Claim 3 (Original) The method of claim 2 wherein the small lot size is 3 or fewer substrates.

Claim 4 (Currently Amended) The method of claim 1 wherein increasing an average cycle time of low priority substrates and decreasing an average cycle time of high priority substrates comprises prior to processing, storing small lot size substrate carriers containing low priority substrates within the small lot size substrate carrier storage locations of one or more of the processing tools for a longer time period than small lot size substrate carriers containing high priority substrates.

Claim 5 (Currently Amended) A method of managing work in progress within a small lot size semiconductor device manufacturing facility comprising:

providing a small lot size semiconductor device manufacturing facility having:

a plurality of processing tools;
small lot size substrate carrier storage locations proximate each of the processing tools; and
a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates;

storing small lot size substrate carriers containing low priority substrates within the small lot size substrate carrier storage locations of one or more of the processing tools; and

processing high priority substrates available to the one or more of the processing tools ahead of the stored low priority substrates so as to reduce cycle time of high priority substrates without correspondingly reducing work in progress within the small lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates.

Claim 6 (Original) The method of claim 5 wherein the small lot size is 5 or fewer substrates.

Claim 7 (Original) The method of claim 6 wherein the small lot size is 3 or fewer substrates.

Claim 8 (Currently Amended) A method of managing work in progress within a small lot size semiconductor device manufacturing facility comprising:

providing a small lot size semiconductor device manufacturing facility having:

a plurality of processing tools;
small lot size substrate carrier storage locations proximate each of the processing tools; and
a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates;

storing small lot size substrate carriers containing low priority substrates and small lot size substrate carriers containing high priority substrates within

the small lot size substrate carrier storage locations of one or more of the processing tools; and

prior to processing within the one or more of the processing tools, storing high priority substrates for a shorter time period on average than low priority substrates so as to reduce cycle time of high priority substrates without correspondingly reducing work in progress within the small lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates.

Claim 9 (Currently Amended) A method of managing work in progress within a small lot size semiconductor device manufacturing facility comprising:

providing a small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and

a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

processing high and low priority substrates within the small lot size semiconductor device manufacturing facility with different cycle times while keeping average cycle time and work in progress at approximately the same level as average cycle time and work in progress of a large lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates; and

wherein the large lot size semiconductor device manufacturing facility transports substrates in large lot size substrate carriers each adapted to transport 13 or more substrates.

Claim 10 (Currently Amended) A method of managing work in progress within a small lot size semiconductor device manufacturing facility comprising:

providing a small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and
a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

processing substrates within the small lot size semiconductor device manufacturing facility with a lower average cycle time than a large lot size semiconductor device manufacturing facility while maintaining approximately the same overall output as the large lot size semiconductor device manufacturing facility;

wherein the large lot size semiconductor device manufacturing facility transports substrates in large lot size substrate carriers each adapted to transport 13 or more substrates.

Claim 11 (Currently Amended) A method of managing work in progress within a small lot size semiconductor device manufacturing facility comprising:

providing a small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and
a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

processing substrates within the small lot size semiconductor device manufacturing facility with approximately the same average cycle time and work in progress as a large lot size semiconductor device manufacturing facility while increasing output of the small lot size semiconductor device manufacturing facility relative to the large lot size semiconductor device manufacturing facility;

wherein the large lot size semiconductor device manufacturing facility transports substrates in large lot size substrate carriers each adapted to transport 13 or more substrates.

Claim 12 (Currently Amended) A method of managing work in progress within a small lot size semiconductor device manufacturing facility comprising:

providing a small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and
a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

identifying work in progress that is not to be processed within a predetermined time period;

transferring the identified work in progress from small lot size substrate carriers to large lot size

substrate carriers, each large lot size substrate carrier adapted to transport 13 or more substrates; and

storing the large lot size substrate carriers in volume storage.

Claim 13 (Original) The method of claim 12 wherein transferring the identified work in progress from small lot size substrate carriers to large lot size substrate carriers comprises employing a sorter to transfer the identified work in progress from the small lot size substrate carriers to the large lot size substrate carriers.

Claim 14 (Currently Amended) The method of claim 12 wherein storing the large lot size substrate carriers in volume storage comprises storing the large lot size substrate carriers at a location remote from the processing tools.

Claim 15 (Currently Amended) The method of claim 14 further comprising storing small lot size substrate carriers proximate one or more of the processing tools.

Claim 16 (Original) The method of claim 12 further comprising retrieving a large lot size substrate carrier from volume storage and transferring substrates stored therein back into small lot size substrate carriers.

Claim 17 (Currently Amended) A small lot size semiconductor device manufacturing facility having:

- a plurality of processing tools; and
- a high speed transport system adapted to transport small lot size substrate carriers among the

processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

at least one controller adapted to:

maintain a predetermined work in progress level within the small lot size semiconductor device manufacturing facility by:

increasing an average cycle time of low priority substrates within the small lot size semiconductor device manufacturing facility; and

decreasing an average cycle time of high priority substrates within the small lot size semiconductor device manufacturing facility so as to approximately maintain the predetermined work in progress level within the small lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates.

Claim 18 (Currently Amended) A small lot size semiconductor device manufacturing facility having:

a plurality of processing tools;

small lot size substrate carrier storage locations proximate each of the processing tools;

a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

at least one controller adapted to:

store small lot size substrate carriers containing low priority substrates within the small lot size

substrate carrier storage locations of one or more of the processing tools; and

process high priority substrates available to the one or more of the processing tools ahead of the stored low priority substrates so as to reduce cycle time of high priority substrates without correspondingly reducing work in progress within the small lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates.

Claim 19 (Currently Amended) A small lot size semiconductor device manufacturing facility having:

a plurality of processing tools;
small lot size substrate carrier storage locations proximate each of the processing tools;

a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

at least one controller adapted to:
store small lot size substrate carriers containing low priority substrates and small lot size substrate carriers containing high priority substrates within the small lot size substrate carrier storage locations of one or more of the processing tools; and

prior to processing within the one or more of the processing tools, store high priority substrates for a shorter time period on average than low priority substrates so as to reduce cycle time of high priority substrates without

correspondingly reducing work in progress within the small lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates.

Claim 20 (Currently Amended) A small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and
a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

at least one controller adapted to process high and low priority substrates within the small lot size semiconductor device manufacturing facility with different cycle times while keeping average cycle time and work in progress at approximately the same level as average cycle time and work in progress of a large lot size semiconductor device manufacturing facility;

wherein the high priority substrates each have a priority greater than a priority of any of the low priority substrates; and

wherein the large lot size semiconductor device manufacturing facility transports substrates in large lot size substrate carriers each adapted to transport 13 or more substrates.

Claim 21 (Currently Amended) A small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and

a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

at least one controller adapted to process substrates within the small lot size semiconductor device manufacturing facility with a lower average cycle time than a large lot size semiconductor device manufacturing facility while maintaining approximately the same overall output as the large lot size semiconductor device manufacturing facility;

wherein the large lot size semiconductor device manufacturing facility transports substrates in large lot size substrate carriers each adapted to transport 13 or more substrates.

Claim 22 (Currently Amended) A small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and

a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

at least one controller adapted to process substrates within the small lot size semiconductor device manufacturing facility with approximately the same average cycle time and work in progress as a large lot size semiconductor device manufacturing facility while increasing output of the small lot size semiconductor device manufacturing facility relative to the large lot size semiconductor device manufacturing facility;

wherein the large lot size semiconductor device manufacturing facility transports substrates in large lot size substrate carriers each adapted to transport 13 or more substrates.

Claim 23 (Currently Amended) A small lot size semiconductor device manufacturing facility having:

a plurality of processing tools; and

a high speed transport system adapted to transport small lot size substrate carriers among the processing tools, each small lot size substrate carrier adapted to transport fewer than 13 substrates; and

at least one controller adapted to:

identify work in progress that is not to be processed within a predetermined time period;

transfer the identified work in progress from small lot size substrate carriers to large lot size substrate carriers, each large lot size substrate carrier adapted to transport 13 or more substrates; and

store the large lot size substrate carriers in volume storage.